Exercise - I (Conceptual Questions) Build Up Your Understanding

INERT PAIR EFFECT

1. $T\ell I_3$ is an ionic compound which furnishes the following ions in solution :
(1) $T\ell^{3+}$ and I^- ions (2) $T\ell^+$ and I_3^- ions
(3) $T\ell^+$, I^- ions and I_2 (4) $T\ell^+$ and I^- ions

2. Which oxide is more stable than the other three :
(1) $T\ell_2O_3$ (2) $T\ell_2O$ (3) Ga_2O (4) InO

3. Ga^+ acts as a reducing agent because –
(1) Ga^{3+} state is less stable than Ga^{+1}
(2) Ga^{3+} state is more stable than Ga^{+1}
(3) Ga^{3+} covalent to Ga^{+1} reducing
(4) None of the above

4. The stable oxidation state of $T\ell$ is +1 hence its hydroxide is similar to –
(1) $Ca(OH)_2$ (2) $Al(OH)_3$
(3) $Mg(OH)_2$ (4) NaOH

5. Bismuth does not form stable pentahalide because of :
(1) Its higher electronegativity
(2) Its smaller size
(3) Inert pair effect
(4) Non availability of d-orbitals

6. Which of the following is the least stable and its existence is doubtful
(1) SnI_4 (2) CI_4
(3) PbI_4 (4) GeI_4

BACK BONDING

7. Which of the following is not possible due to back bonding.
(1) State of hybridisation may change
(2) Bond order increases
(3) Bond angle always increases
(4) Lewis acidic strength decreases

8. The geometry with respect to the central atom of the following molecules are $N(SiH_3)_3$, Me_3N, $(SiH_3)_3P$
(1) planar, pyramidal, planar
(2) planar, pyramidal, pyramidal
(3) pyramidal, pyramidal, pyramidal
(4) pyramidal, planar, pyramidal

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9. In which of the following compounds B–F bond length is shortest?
(1) BF_4^- (2) $BF_3 \leftarrow NH_3$
(3) BF_3 (4) $BF_3 \leftarrow N(CH_3)_3$

HYDROLYSIS/CARBIDE AND DIMER/POLYMER

10. Which of the following statements is correct :
(1) Aluminium carbide as well as beryllium carbide produce methane gas on treatment with water
(2) On reacting with water, calcium carbide (CaC_2) produces acetylene while magnesium carbide (Mg_2C_3) gives propyne
(3) Both of these
(4) None of these

11. (a) $Al \xrightarrow{N_2} A$ (b) $Al \xrightarrow{C} B$
Product A and B on hydrolysis yields respectively.
(1) Ammonia and acetylene
(2) Ammonia and methane
(3) Nitric oxide and acetylene
(4) None

12. On hydrolysis CaC_2 gives a gas which on trimerisation gives :
(1) C_2H_2 (2) C_6H_6 (3) C_2H_4 (4) C_3H_8

13. Identify the statement that is not correct as far as structure of diborane is concerned –
(1) There are two bridging hydrogen atoms in diborane
(2) Each boron atom forms four bonds in diborane
(3) All hydrogen atoms are not in the same plane in diborane
(4) All B–H bonds in diborane are similar

14. In diborane –
(1) 2 bridged hydrogen and four terminal hydrogen are present
(2) 3 bridged and three terminal hydrogen are present
(3) 4 bridged hydrogen atoms are not in the same plane in diborane
(4) 1 bridged hydrogen and 1 terminal hydrogen are present

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15. The type of hybridization of boron in diborane is-
(1) sp (2) sp^2
(3) sp^3 (4) sp^3d^2

16. The hydrolysis of PCl_3, produces :
(1) $H_3PO_3 + HClO$ (2) $H_3PO_3 + HCl$
(3) $H_3PO_4 + HCl$ (4) $PH_3 + HClO$

17. Which of the following halides does not hydrolysed?
(1) $PbCl_4$ (2) $SiCl_4$ (3) CCl_4 (4) $SnCl_4$

SILICATES AND SILICONES

18. Silicate having one monovalent corner oxygen atom in each tetrahedron unit is
(1) sheet silicate
(2) cyclic silicate
(3) single chain silicate
(4) double chain silicate

19. $(Si_2O_5)_n^{2n-}$ anion is obtained when
(1) no oxygen of a SiO_4^{4-} tetrahedron is shared with another SiO_4^{4-} tetrahedron
(2) one oxygen of a SiO_4^{4-} tetrahedron is shared with another SiO_4^{4-} tetrahedron
(3) two oxygen of a SiO_4^{4-} tetrahedron is shared with another SiO_4^{4-} tetrahedron
(4) three oxygen of a SiO_4^{4-} tetrahedron is shared with another SiO_4^{4-} tetrahedron

20. Which of the following is an organo silicon polymer?
(1) silica (2) silicone
(3) silicon carbide (4) silicic acid

ALLOTROPES

21. What is true about various allotropes of carbon ?
(1) Diamond is the hardest and graphite is the softest
(2) Diamond is the hardest and coke is the softest
(3) Diamond is the hardest and lamp black is the softest
(4) Coke is the hardest and diamond is the softest

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22. Different layers in graphite are held together by :
(1) Ionic bonding
(2) Metallic bonding
(3) Covalent bonding
(4) Vander waals forces

23. The density of –
(1) Graphite = diamond
(2) Graphite > diamond
(3) Graphite < diamond
(4) Graphite $\geq$ diamond

24. Which of the following structural features of graphite best accounts for its use as a lubricant?
(1) delocalized electrons
(2) strong covalent bonds between carbon atoms
(3) van der Waal's forces between layers
(4) limited three covalency of carbon

BORON FAMILY

25. Melting point is higher for –
(1) B (2) Al (3) Ga (4) In

26. Aluminium is not acted upon by pure water as–
(1) Impurities in water are essential for the reaction to occur
(2) It is light metal
(3) It is protected by a film of aluminium oxide
(4) It is not a reactive metal

27. Which of the following can be detected by the borax-bead test ?
(1) Ni^{2+} (2) Co^{2+}
(3) Pb^{+2} (4) Both (1) & (2)

28. The borax bead test is based upon the formation of
(1) Boron oxide (2) Boric acid
(3) Meta borates (4) Elemental boron

29. A mixutre of boric acid with ethyl alcohol burns with green edged flame due to the formation of –
(1) Ethyl borax (2) Ethyl borate
(3) Methyl borax (4) Methyl borate

30. The hydrolysis of borax produces –
(1) An acidic medium
(2) A basic medium
(3) A neutral medium
(4) An acidic or an neutral medium

31. Boric acid polymerizes due to –
(1) The presence of hydrogen bonds
(2) Its acidic nature
(3) Its geometry
(4) Its monobasic nature

32. In the following reaction –
$B(OH)_3 + H_2O \longrightarrow [B(OH)_4]^- + H^+$
(1) $B(OH)_3$ is a Lewis acid
(2) $B(OH)_3$ is a Lewis base
(3) $B(OH)_3$ is amphoteric
(4) None is correct

33. Boron nitride is isoelectronic with
(1) C_2 (2) B_2 (3) N_2 (4) O_2

34. Borax $Na_2B_4O_7 . 10H_2O$ is actually :-
(1) $Na_2[B_4O_5(OH)_4].8H_2O$
(2) $Na_2[B_4O_4(OH)_6].7H_2O$
(3) $Na_2[B_4O_3(OH)_8].6H_2O$
(4) $Na_2[B_4O_2(OH)_{10}].5H_2O$

35. Inorganic graphite (Borazone) is :-
(1) $B_3N_3H_6$ (2) B_2H_6 (3) BN (4) BF_3

36. On hydrolysis, diborane produces :
(1) $H_3BO_2 + H_2O_2$ (2) $H_3BO_3 + H_2$
(3) $B_2O_3 + O_2$ (4) $H_3BO_3 + H_2O_2$

37. By which of the following reactions is borazine prepared ?
(1) $B_2H_6 + NH_3$ (excess) $\xrightarrow{\text{low temperature}}$
(2) $B_2H_6 + NH_3$ (excess) $\xrightarrow{\text{high temperature}}$
(3) $B_2H_6 + NH_3 \xrightarrow[\text{high temperature}]{(\text{ratio } 2NH_3 : 1B_2H_6)}$
(4) None of the above

38. Diborane is a Lewis acid forming addition compound $B_2H_6.2NH_3$ with NH_3, a Lewis base. This
(1) Is ionic and exists as $[BH_2(NH_3)_2]^+$ and $[BH_4]^-$ ions
(2) On heating, is converted into borazine, $B_3N_3H_6$
(3) (1) & (2) are correct
(4) None is correct

39. Inorganic benzene (borazole) is :
(1) BH_3O_3 (2) $B_3N_3H_6$
(3) B_2H_6 (4) B_6H_{10}

40. Which alum is a double salt made up of two salts :
(1) Salt of a (SA + WB) + Salt of a (WA + WB)
(2) Salt of a (SA + SB) + Salt of a (SA + WB)
(3) Salt of a (SA + SB) + Salt of a (WA + WB)
(4) Salt of a (SA + WB) + Salt of a (WA + WB)

41. Which of the following salt does not respond to borax bead test :
(1) Aluminium salt (2) Cobalt salt
(3) Copper salt (4) Nickel salt

42. The hydrides of boron are called
(1) Boron hydrogen compounds
(2) Hydrogen borides
(3) Boranes
(4) Hydroboric acids

43. Which is an acid :
(1) $B(OH)_3$ (2) $Al(OH)_3$
(3) $Fe(OH)_3$ (4) None

44. Which one of the following mixed sulphates is not an alum ?
(1) $K_2SO_4.Al_2(SO_4)_3.24H_2O$
(2) $K_2SO_4.Cr_2(SO_4)_3.24H_2O$
(3) $Na_2SO_4.Fe_2(SO_4)_3.24H_2O$
(4) $CuSO_4.Al_2(SO_4)_3.24H_2O$

45. Which of the following is used in high temperature thermometry ?
(1) Na (2) Ga (3) Tl (4) Hg

46. Borax in its crystal possess :
(1) 3 tetrahedral unit
(2) 2 tetrahedral and 2 planar triangular units
(3) 3 tetrahedral and 2 planar triangular units
(4) all tetrahedral units

47. The borax bead is chemically :
(1) B_2O_3 (2) $Na_2B_4O_7$
(3) Na_3BO_3 (4) $B_2O_3 + NaBO_2$

48. Borax bead test is responded by :
(1) divalent metals
(2) heavy metals
(3) light metals
(4) metal which forms coloured metaborates

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49. Borax on heating with cobalt oxide forms a dark blue bead of
(1) $Co(BO_2)_2$ (2) $CoBO_2$
(3) $Co_3(BO_3)_2$ (4) $Na_3Co(BO_3)_2$

CARBON FAMILY

50. The metallic character of group-14 :
(1) Decreases from top to bottom
(2) Increases from top to bottom
(3) Does not change gradually
(4) Has no significance.

51. The hydrides of group 14 elements are :
(1) Ionic (2) Oxidising
(3) Covalent (4) None of these

52. Which of the following statement is false :
(1) Dry ice is solid CO_2
(2) CO_2 is weakly acidic
(3) CO_2 and SiO_2 are linear molecules
(4) CO_2 is a gas while SiO_2 is solid

53. CO is :
(1) Reductant
(2) Poisonous gas
(3) Neutral to litmus
(4) all

54. Carbon reacts with metal to form :
(1) Carbide
(2) Carbonate
(3) Hydroxide
(4) Oxide

55. Which gas is responsible for green house effect :
(1) CO_2 (2) SO_2
(3) CO (4) SO_3

EXERCISE-I (Conceptual Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	2	2	2	4	3	3	3	2	3	3	2	2	4	1	3
Question	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30
Answer	2	3	1	4	2	3	4	3	3	1	3	4	3	2	2
Question	31	32	33	34	35	36	37	38	39	40	41	42	43	44	45
Answer	1	1	1	1	3	2	3	3	2	2	1	3	1	4	2
Question	46	47	48	49	50	51	52	53	54	55					
Answer	2	4	4	1	2	3	3	4	1	1					

Exercise - II (Previous Year Questions) AIPMT/NEET

AIPMT - 2006

1. Al_2O_3 can be converted to anhydrous $AlCl_3$ by heating
(1) Al_2O_3 with Cl_2 gas
(2) Al_2O_3 with HCl gas
(3) Al_2O_3 with NaCl in solid state
(4) A mixture of Al_2O_3 and carbon in dry Cl_2 gas

AIPMT - 2007

2. Which one of the following anions is present in the chain structure of silicates
(1) SiO_4^{4-} (2) $Si_2O_7^{6-}$
(3) $(Si_2O_5^{2-})_n$ (4) $(SiO_3^{2-})_n$

AIPMT - 2009

3. The straight chain polymer is formed by :-
(1) Hydrolysis of $(CH_3)_2SiCl_2$ followed by condensation polymerisation
(2) Hydrolysis of $(CH_3)_3SiCl$ followed by condensation polymerisation
(3) Hydrolysis of CH_3SiCl_3 followed by condensation polymerisation
(4) Hydrolysis of $(CH_3)_4$ Si by addition polymerisation

AIPMT Pre.- 2011

4. Name the type of the structure of silicate in which one oxygen atom of $[SiO_4]^{4-}$ is shared?
(1) Linear chain silicate
(2) Sheet silicate
(3) Pyrosilicate
(4) Three dimensional

AIPMT Mains - 2011

5. Which of the following oxide is amphoteric :-
(1) CO_2 (2) SnO_2
(3) CaO (4) SiO_2

NEET-UG 2013

6. Which of the following is electron-deficient ?
(1) PH_3 (2) $(CH_3)_2$
(3) $(SiH_3)_2$ (4) $(BH_3)_2$

7. Which of the following structure is similar to graphite?
(1) B_2H_6 (2) BN
(3) B (4) B_4C

8. The basic structural unit of silicates is :-
(1) SiO_4^{2-} (2) SiO^-
(3) SiO_4^{4-} (4) SiO_3^{2-}

9. Which of these is not a monomer for a high molecular mass silicone polymer ?
(1) $PhSiCl_3$ (2) $MeSiCl_3$
(3) Me_2SiCl_2 (4) Me_3SiCl

Re-AIPMT 2015

10. The stability of +1 oxidation state among Al, Ga, In and Tℓ increases in the sequence :
(1) Tℓ < In < Ga < Al (2) In < Tℓ < Ga < Al
(3) Ga < In < Al < Tℓ (4) Al < Ga < In < Tℓ

NEET-I 2016

11. Among the following, the correct order of acidity is
(1) $HClO_3 < HClO_4 < HClO_2 < HClO$
(2) $HClO < HClO_2 < HClO_3 < HClO_4$
(3) $HClO_2 < HClO < HClO_3 < HClO_4$
(4) $HClO_4 < HClO_2 < HClO < HClO_3$

NEET-II 2016

12. Boric acid is an acid because its molecule
(1) accepts OH^- from water releasing proton
(2) combines with proton from water molecule
(3) contains replaceable H^+ ion
(4) gives up a proton

13. In context with beryllium, which one of the following statements is **incorrect** ?
(1) Its salts rarely hydrolyze.
(2) Its hydride is electron-deficient and polymeric.
(3) It is rendered passive by nitric acid.
(4) it forms Be_2C.

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NEET(UG) 2017

14. It is because of inability of ns^2 electrons of the valence shell to participate in bonding that:-

(1) Sn^{2+} is oxidising while Pb^{4+} is reducing

(2) Sn^{2+} and Pb^{2+} are both oxidising and reducing

(3) Sn^{4+} is reducing while Pb^{4+} is oxidising

(4) Sn^{2+} is reducing while Pb^{4+} is oxidising

NEET(UG) 2018

15. The correct order of N-compounds in its decreasing order of oxidation states is

(1) HNO_3, NO, N_2, NH_4Cl

(2) HNO_3, NO, NH_4Cl, N_2

(3) HNO_3, NH_4Cl, NO, N_2

(4) NH_4Cl, N_2, NO, HNO_3

NEET(UG) 2020

16. Which of the following is **not** correct about carbon monoxide?

(1) It is produced due to incomplete combustion

(2) It forms carboxyhaemoglobin

(3) It reduce oxygen carrying ability of blood

(4) The carboxyhaemoglobin (haemoglobin bound to CO) is less stable than oxyhaemoglobin.

17. Match the following and identify the correct option.

(a) $CO(g) + H_2(g)$	(i) $Mg(HCO_3)_2 + Ca(HCO_3)_2$
(b) Temporary hardness of water	(ii) An electron deficient hydride
(c) B_2H_6	(iii) Synthesis gas
(d) H_2O_2	(iv) Non-planar structure

	(a)	(b)	(c)	(d)
(1)	(i)	(iii)	(ii)	(iv)
(2)	(iii)	(i)	(ii)	(iv)
(3)	(iii)	(ii)	(i)	(iv)
(4)	(iii)	(iv)	(ii)	(i)

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18. Identify the **correct** statements from the following:

(a) $CO_2(g)$ is used as refrigerant for ice-cream and frozen food.

(b) The structure of C_{60} contains twelve six carbon rings and twenty five carbon rings.

(c) ZSM-5, a type of zeolite, is used to convert alcohols into gasoline.

(d) CO is colorless and odourless gas.

(1) (c) and (d) only

(2) (a) and (b) and (c) only

(3) (a) and (c) only

(4) (b) and (c) only

NEET(UG) 2021

19. The bonds present in borazole are

(1) 12σ, 3π (2) 9σ, 6π

(3) 6σ, 6π (4) 9σ, 9π

20. Which is/are correct statements about P_4O_6 and P_4O_{10}?

(1) Both form oxoacids H_3PO_3 and H_3PO_4 respectively

(2) In P_4O_6 each P is joined to three O and in P_4O_{10} each P is linked to four O atoms.

(3) Both (1) and (2)

(4) None of the above

21. In SiF_6^{2-} and $SiCl_6^{2-}$ which one is known and why?

(1) SiF_6^{2-} because of small size of F

(2) SiF_6^{2-} because of large size of F

(3) $SiCl_6^{2-}$ because of small size of Cl

(4) $SiCl_6^{2-}$ because of large size of Cl

22. The structures of beryllium chloride in solid state and vapour phase, are:

(1) Chain and dimer, respectively

(2) Linear in both

(3) Dimer and Linear, respectively

(4) Chain in both

NEET(UG) 2022

23. Choose the correct statement :

(1) Diamond is covalent and graphite is ionic.

(2) Diamond is sp^3 hybridised and graphite is sp^2 hybridized.

(3) Both diamond and graphite are used as dry lubricants.

(4) Diamond and graphite have two dimensional network.

24. Which of the following statement is **not** correct about diborane ?

(1) The four terminal B-H bonds are two centre two electron bonds.

(2) The four terminal Hydrogen atoms and the two Boron atoms lie in one plane.

(3) Both the Boron atoms are sp^2 hybridised

(4) There are two 3-centre-2-electron bonds.

25. Match List-I with List-II :

	List-I (Compounds)		**List-II (Molecular formula)**
(a)	Borax	(i)	$NaBO_2$
(b)	Kernite	(ii)	$Na_2B_4O_7.4H_2O$
(c)	Orthoboric acid	(iii)	H_3BO_3
(d)	Borax bead	(iv)	$Na_2B_4O_7.10H_2O$

Choose the **correct answer** from the options given below :

(1) (a) – (iv), (b) – (ii), (c) – (iii), (d) – (i)

(2) (a) – (ii), (b) – (iv), (c) – (iii), (d) – (i)

(3) (a) – (iii), (b) – (i), (c) – (iv), (d) – (ii)

(4) (a) – (i), (b) – (iii), (c) – (iv), (d) – (ii)

26. $Na_2B_4O_7 \xrightarrow{heat} X + NaBO_2$

in the above reaction the product "X" is :

(1) H_3BO_3 (2) B_2O_3

(3) $Na_2B_2O_5$ (4) NaB_3O_5

EXERCISE-II (Previous Year Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**4**	**4**	**1**	**3**	**2**	**4**	**2**	**3**	**4**	**4**	**2**	**1**	**1**	**4**	**1**
Question	16	17	18	19	20	21	22	23	24	25	26				
Answer	**4**	**2**	**1**	**1**	**3**	**1**	**1**	**2**	**3**	**1**	**2**				

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Exercise – III (Analytical Questions) Master Your Understanding

1. Given below are two statements :
Statement-I : BCl_3 is more state than $TlCl_3$.
Statement-II : Boric acid is a protic acid.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Statement-I and Statement-II are correct.
(2) Statement-I is correct but Statement-II is incorrect.
(3) Both Statement-I and II are incorrect.
(4) Statement-I is incorrect but Statement-II is correct.

2. Given below are two statements :
Statement-I : Aq. solution of Borax is alkaline to litmus paper.
Statement-II : Diamond is thermodynamically more stable than graphite.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Statement-I and Statement-II are correct.
(2) Statement-I is correct but Statement-II is incorrect.
(3) Both Statement-I and II are incorrect.
(4) Statement-I is incorrect but Statement-II is correct.

3. Given below are two statements :
Statement-I : Chain length of Silicon polymer can be controlled by adding $(CH_3)_2SiCl_2$.
Statement-II : Silica gel is used as a drying agent.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Statement-I and Statement-II are correct.
(2) Statement-I is correct but Statement-II is incorrect.
(3) Both Statement-I and II are incorrect.
(4) Statement-I is incorrect but Statement-II is correct.

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4. Given below are two statements :
Statement-I : Graphite has layered structure in which layers are held by Vander wall's force.
Statement-II : In fullerene a six member ring is fused with six and five membered ring but a five membered ring can only fused with six membered ring.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Statement-I and Statement-II are correct.
(2) Statement-I is correct but Statement-II is incorrect.
(3) Both Statement-I and II are incorrect.
(4) Statement-I is incorrect but Statement-II is correct.

5. Given below are two statements :
Statement-I : In B_2H_6 bridge bonds are stronger than terminal bonds.
Statement-II : In Diborane all atoms can lie in the same plane.
In the light of the above statements, choose the **most appropriate** answer from the options given below :
(1) Statement-I and Statement-II are correct.
(2) Statement-I is correct but Statement-II is incorrect.
(3) Both Statement-I and II are incorrect.
(4) Statement-I is incorrect but Statement-II is correct.

6. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .
Assertion : Boric acid is considered as a weak acid.
Reason : It is not able to release $H^{\oplus}$ ions on its own.
In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(3) (A) is correct but (R) is not correct.
(4) (A) is not correct but (R) is correct.

7. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .

Assertion : Aluminium wire is used to make transmission cables.

Reason : Aluminium has a high electrical and thermal conductivity and due to its low cost & light weight.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(3) (A) is correct but (R) is not correct.
(4) (A) is not correct but (R) is correct.

8. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .

Assertion : (B–F) Bond lengths in BF_3 and BF_4^- is different.

Reason : In both BF_3 and BF_4^- $P_\pi - P_\pi$ back bonding is present.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(3) (A) is correct but (R) is not correct.
(4) (A) is not correct but (R) is correct.

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9. Given below are two statements; one is labelled as **Assertion (A)** and the other is labelled as **Reason(R)** .

Assertion : Stability of +5 O.S. state decreases and that of +3 oxidation state increases down the group in group 15.

Reason : Inert pair effect is more prone in case of heavier members of p-block.

In the light of the above statements, choose the **most appropriate** answer from the options given below :

(1) Both (A) and (R) are correct and (R) is the correct explanation of (A).
(2) Both (A) and (R) are correct but (R) is not the correct explanation of (A).
(3) (A) is correct but (R) is not correct.
(4) (A) is not correct but (R) is correct.

10. Match the column :

Column-I		Column-II	
(A)	Borax $\xrightarrow{\Delta}$	(i)	BN
(B)	$B_2H_6 + H_2O \rightarrow$	(ii)	B_2H_6
(C)	$B_2H_6 + NH_3$ (excess) $\rightarrow$	(iii)	H_3BO_3
(D)	$BCl_3 + LiAlH_4 \rightarrow$	(iv)	$NaBO_2 + B_2O_3$

(1) A - iii, B - iv, C - ii, D - i
(2) A - ii, B - i, C - iv, D - iii
(3) A - i, B - ii, C - iii, D - iv
(4) A - iv, B - iii, C - i, D - ii

11. Match the column :

Column-I		Column-II (Basic unit)	
(A)	Ortho Silicate	(i)	SiO_2
(B)	Pyro Silicate	(ii)	$\left(Si_2O_5^{-2}\right)_\eta - \eta X$
(C)	2-D Silicate	(iii)	$Si_2O_7^{-6}$
(D)	3-D Silicate	(iv)	$\left(SiO_4^{-4}\right)$

(1) A - iv, B - iii, C - ii, D - i
(2) A - ii, B - iii, C - i, D - iv
(3) A - iii, B - ii, C - iv, D - i
(4) A - iv, B - i, C - iii, D - ii

12. Match the column :

Column-I		Column-II	
(A)	Borax	(i)	Form complex with haemoglobin
(B)	Diborane	(ii)	used as a fire extinguisher
(C)	Carbon mono oxide	(iii)	Swell's up on heating
(D)	Carbon dioxide	(iv)	Catches fire spontaneously

(1) A - i, B - iii, C - ii, D - iv
(2) A - ii, B - i, C - iv, D - iii
(3) A - iii, B - iv, C - i, D - ii
(4) A - iv, B - ii, C - iii, D – i

13. In which of the following terminal (2C – 2e⁻) bond and bridge bond are not lying in the same plane ?
(1) B_2H_6
(2) Solid $BeCl_2$
(3) Al_2Cl_6
(4) I_2Cl_6

14. SiO_2 reacts with :-
(1) HF (2) NaOH
(3) HCl (4) CO_2

15. Which of the following compound produce oxy acid of central atom on hydrolysis ?
(1) BF_3 (2) SF_4
(3) PCl_5 (4) NCl_3

EXERCISE-III (Analytical Questions) ANSWER KEY

Question	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15
Answer	**2**	**2**	**4**	**1**	**2**	**1**	**1**	**3**	**1**	**4**	**1**	**3**	**1**	**2**	**1**

Important Notes